C. Ess and F. Sudweeks (eds). Proceedings Cultural Attitudes Towards Communication and Technology '98, University of Sydney, Australia, 263-267.

CULTURE AND PARTICIPATION IN THE DEVELOPMENT OF CMC:

Indigenous Cultural Information System Case Study

ANDREW TURK AND KATHRYN TREES
Murdoch University
South Street
Murdoch WA 6150
Australia

Abstract. Computer-Mediated Communication (CMC) networks need to be viewed as information systems and appropriate socio-technical methodologies employed in their design and evaluation. Human factors issues are of particular importance for such systems, especially where they are used for cross-cultural communication. Culture, values and attitudes towards technology of the system users (and designers) are important factors which can be addressed through the use of a highly participatory system development methodology. Significant ethical issues arise for system developers, especially in the context of systems involving indigenous communities and the preservation of local cultures. The paper discusses these topics and summarises their relevance to a cultural heritage information system being developed with an indigenous community in the Pilbara region of Western Australia.

1. Highly Participative Methodology for Culturally-Appropriate CMC

Computer-mediated communication (CMC) occurs in an increasing variety of work and social contexts. Analysis of CMC may be enhanced by adopting design and evaluation procedures from the information systems (IS) discipline. These procedures integrate technical and social (human factors) aspects, enabling the efficiency, effectiveness and equity of the system to be analysed in a coherent and comprehensive manner.

The IS discipline studies the way individuals, groups and organisations use information. This is generally in the context of computer-based IS, which can be considered to consist of five aspects: hardware; software; data; people and procedures. IS analysts assist organisations to fulfill their objectives through projects which seek to identify information processing requirements and to design, implement and maintain a suitable IS. Such projects are usually executed in accordance with a particular set of procedures, techniques and tools,

collectively referred to as a methodology. Although these methodologies have traditionally focused primarily on the design of hardware, software and data aspects of the IS, newer (so called 'soft') approaches involve more consideration of human factors issues (Avison et al., 1993; Crowe et al., 1996). These socio-technical methodologies incorporate a higher level of participation by system users and focus on identification of culturally-determined user needs and constraints.

The development of an information system needs to be seen as a social as well as a technical process. The methodology used should enable the analyst to understand the culture and values of the people who are likely to use the system and to design the system so that it matches their needs. The higher the level of user participation in the process the more likely it is that it will be culturally-appropriate, provided the methodology is suitable and is applied effectively. User participation can be justified on practical grounds in that it aids greatly in requirements determination and heightens user satisfaction and 'ownership' of the resulting system. It is also important from an ethical standpoint (Kling, 1996).

The following steps may be used to investigate an instance of CMC:

- examination of the objectives and hence information requirements;
- detailing of user and task characteristics and typical use scenarios;
- determination of the data sets and processing functionality requirements;
- examination of the usability of the system and user satisfaction;
- determination of suitable implementation and maintenance procedures.

The resulting system will tend to be more culturally-appropriate if the active participation of users is maximised at each stage of development. However, participation is probably most important in the early stages since this is where the most fundamental decisions are taken. System usability and cultural-appropriateness is not about superficial (interface) issues alone but must be built into the very nature of the system.

2. Description of the ICIS Project

Ireamugadu (Roebourne) is a small town near the coast in the Pilbara region of Western Australia, with a population of approximately one 1,500 people, 95% of who are indigenous. It is the place where many Ngaluma, Injibandi and Banjima people live, although the traditional country of most of the people is up to 200 km inland. Many of the older indigenous people in Roebourne have little or no formal (non-traditional) schooling. However, children today attend primary and secondary schools and an increasing number undertake trades courses or university degrees. Health and living standards have been, and are still, poor. It is a town that has seen much violence. In the 1990’s strong

indigenous leadership and a relatively united community has resulted in significant changes.

The authors are working with the indigenous community at Roebourne to develop a cultural heritage information system utilising multimedia, geographic information system (GIS) and database technology (Trees and Turk, 1998a, 1998b). The project was initiated by a request from the community early in 1996 and is called the Ieramugadu Cultural Information System (ICIS). The aim is to provide a flexible information bank capable of producing convincing products in a variety of circumstances (e.g. education or negotiation) in line with community needs and not infringing cultural constraints. The conceptual framework must match the complex social system and the forms of representation used must be adequate to fully express the underlying cultural concepts - i.e. the integrated relationships between:

places: not just an arbitrary configuration of physical locations but an assemblage of places connected by meanings associated with traditional belief systems;

people: the specific group/s of people who possess the meaningful relationship with (and are responsible for) those particular places;

procedures: the laws and customs which link the people to the places and sustain their unique relationship to the land and each other;

presentations: the practices and physical manifestations by which the laws and customs and meaning relations between the people and places are expressed (and hence maintained), such as ceremonies and paintings.

Because the most fundamental thing in indigenous culture is land, spatial aspects are especially important. Thus, ICIS uses GIS software linked to multimedia and database elements. Using the government topographic mapping as a spatial base, new maps are being created which use the traditional names and show places of cultural significance. Multimedia elements (such as images, sounds and video sequences) can then be associated with particular locations to help convey the connection between place and traditional law. The genealogical database can also be linked to the GIS showing the places of significance to particular people, such as where they were born and their mother's "country". The multimedia elements can be made more rich and incorporate representations of law through paintings, songs and ceremonies. ICIS will then fulfill the objective of representing the four-way relationships between place, people, procedures and presentations.

A key step in the development of these system concepts has been the establishment of Ngurra Wangkamagayi (the cultural training group). The authors have worked with group members and tribal elders to record cultural information in digital form and to develop appropriate narrative structures for its use in cultural awareness courses run by the group for staff from mining

companies, teachers, school groups and others. This may be followed by development of cultural tourism activities. So far only hard copy outputs have been used, however, this has established some basic parameters for the development of on-line multimedia presentations.

This project addresses key ethical aspects in the context of post-colonial practice, critical ethnography and visual anthropology. Culturally appropriate technology developments must complement existing oral traditions. They must also engage with specific cultural practices such as naming taboo - the prohibition on using a person's name after death. With the use of photography, film and multimedia in indigenous communities the naming taboo has been redefined to take into account the use of images (Michaels, 1990).

Relevant ethical issues include the following:

- Are computer-based IS and indigenous culture incompatible (in terms of ontology and epistemology)?
- Is information technology a tool for epistemological assimilation?
- Can the richness of indigenous concepts be represented in a computer?
- Do IS take indigenous knowledge away from the community?
- Do IS inscribe and fix cultural knowledge inappropriately?
- Are IS incompatible with oral traditions?
- What (whose) authority does the information carry?
- Is there proper respect for gender specific aspects of information?
- How does the project affect relationships between generations?
- Can possible misuse of information be avoided?

3. Conclusions

To date there has been no on-line access to information involved in the ICIS project, although several possible scenarios have been examined. For instance, the Ngurra Wangkamagayi culture group could maintain a web site with example heritage information to encourage potential cultural tourists to contact the group and make a booking, possibly interactively. The indigenous participants are not yet ready to meaningfully debate the relevant issues and decide what they want to do and the best way to achieve it. This is as much about the relationships between people and social procedures as about the confidentiality of specific information.

The discussion above clearly illustrates the importance of using a highly participative methodology for the development of ICIS. The strong cultural and ethical aspects of the project make it easy to understand that such an approach is needed. Although the importance of participation may be less starkly apparent for the development of other types of information systems and for CMC, we

contend that all users have unique cultures and that ethical considerations are no less critical for being subtle and difficult to discern.

References

Avison, D., Kendall, J. E. and DeGross, J. I. (eds): 1993, *Human, Organizational, and Social Dimensions of Information Systems Development*, Elsevier Science.

Crowe, M., Beeby, R. and Gammack, J.: 1996, *Constructing Systems and Information: A Process View*, McGraw Hill.

Kling, B. (ed.): 1996, *Computerization and Controversy: Value Conflicts and Social Choices*, Academic Press.

Michaels, E.: 1990, *Bad Aboriginal Art: Tradition, Media, and Technological Horizons*, Allen & Unwin.

Trees, K., and Turk, A. G.: 1998a, Reconciling space: Negotiating connection to an indigenous immemorial past, *in* R. Barcan and I. Buchanan (eds), *Spaciographies: Essays in Australian Space*, University of Sydney Press (in press).

Trees, K. and Turk, A. G.: 1998b, Culture, collaboration and communication: Participative development of the Ieramugadu Cultural Heritage Information System (ICIS), *Critical Arts Journal* (in press).